Amendments to the Claims:

This Listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-50 (Canceled).

51. (New) A biocompatible non-porous matrix based on chitosan and an acid, wherein said matrix is produced by:

providing an aqueous solution comprising a chitosan and an acid, wherein said acid is present in excess;

drying the solution without freezing; and

removing excess acid before or/and after the drying.

52. (New) The non-porous biocompatible matrix of claim 51, wherein the acid is a hydroxy carboxylic acid.

53. (New) The non-porous biocompatible matrix of claim 51, wherein the matrix is in the form of a sheet, a hollow article, or a roll.

54. (New) The non-porous biocompatible matrix of claim 52, wherein the hydroxy carboxylic acid is a member selected from the group consisting of glycolic acid, lactic acid, malic acid, tartaric acid, citric acid and mandelic acid.

55. (New) The non-porous biocompatible matrix of claim 54, wherein the hydroxy carboxylic acid is lactic acid

56. (New) A biocompatible matrix system comprising at least one biocompatible non-porous matrix as claimed in claim 51 and at least one biocompatible porous matrix.

57. (New) The biocompatible matrix system of claim 56, wherein the at least one biocompatible porous matrix has a structure based on chitosan and an acid.

58. (New) The biocompatible matrix system of claim 57, wherein the acid of the porous matrix is a hydroxy carboxylic acid.

59. (New) The biocompatible matrix system of claim 57, wherein the porous matrix is produced by:

providing an aqueous solution comprising a chitosan and an acid, wherein said acid is present in excess;

freezing and drying the solution; and

removing excess acid before or/and after the freezing.

60. (New) The biocompatible matrix system of claim 59, wherein the acid is a hydroxy carboxylic acid.

61. (New) The biocompatible matrix system of claim 59, wherein the drying is achieved by sublimation under reduced pressure.

62. (New) The biocompatible matrix system of claim 56, wherein the at least one non-porous matrix and the at least one porous matrix are disposed alternatively in layers.

63. (New) A method for culturing cells in vitro, said method comprising:

obtaining cells; and

culturing the cells on the non-porous matrix of claim 51.

64. (New) The method of claim 63, wherein the matrix system comprises a ligand.

65. (New) The method of claim 64, wherein the ligand is a factor for cell growth.

66. (New) The method of claim 63, wherein the cells are obtained from cartilage, bone, blood vessel tissue, skin, or nerve tissue.

67. (New) The method of claim 63, wherein the matrix is a bioreactor filling material for producing cells, proteins, or viruses.

68. (New) The method of claim 63, wherein the matrix is a microcarrier of filling material for a bioreactor.

69. (New) The method of claim 66, wherein the blood vessel tissue provides for capillary generation.

70. (New) The method of claim 63, wherein the cells are blood stem cells.

71. (New) The method of claim 63, wherein the matrix provides for artificial organ generation.

72. (New) The method of claim 63, wherein the matrix provides for skin system generation.

73. (New) The method of claim 72, wherein the matrix is multilayered.

74. (New) A method for repairing a cartilage or bone defect, said method comprising implanting the non porous matrix of claim 51 in the area of a bone or cartilage defect in a patient, wherein the matrix is without previous cell colonization.

75. (New) A method for replacing a microcapillary in a patient, said method comprising introducing the non porous matrix of claim 51, in the form of a microcapillary, in a patient, wherein the matrix is without previous cell colonization.

76. (New) A method for providing a filler material during surgery comprising implanting the non porous matrix of claim 51 in a patient in need of such filler, wherein the matrix is without previous cell colonization.

77. (New) A biocompatible matrix having anisotropic structures, said matrix comprising chitosan and an acid.

78. (New) The anisotropic biocompatible matrix of claim 77, wherein the acid is a hydroxy carboxylic acid.

79. (New) The anisotropic biocompatible matrix of claim 77, wherein said matrix comprises fibers or chambers in parallel alignment.

80. (New) The anisotropic biocompatible matrix of claim 77, wherein said matrix is porous.

81. (New) The anisotropic biocompatible matrix of claim 77, wherein said matrix is produced by:

providing an aqueous solution comprising a chitosan and an acid, wherein the acid is present in excess,

providing anisotropic freezing and drying of the solution,

removing excess acid before or/and after the freezing.

82. (New) The anisotropic biocompatible matrix of claim 81, wherein the acid is a hydroxy carboxylic acid.

83. (New) The anisotropic biocompatible matrix of claim 81, wherein the drying is achieved by sublimation under reduced pressure.

84. (New) A biocompatible matrix system comprising at least one biocompatible anisotropic porous matrix as claimed in claim 77 and at least one biocompatible non-porous matrix.

85. (New) A method for culturing cells in vitro, said method comprising:

obtaining cells; and

culturing the cells on the anisotropic matrix of claim 77.

86. (New) A method for repairing a cartilage or bone defect, said method comprising implanting the matrix of claim 77 in the area of a bone or cartilage defect in a patient, wherein the matrix is without previous cell colonization.

87. (New) A method for replacing a microcapillary in a patient, said method comprising introducing the matrix of claim 77, in the form of a microcapillary, in a patient, wherein the matrix is without previous cell colonization.

88. (New) A method for providing a filler material during surgery comprising implanting the matrix of claim 77 in a patient in need of such filler, wherein the matrix is without previous cell colonization.

89. (New) A biocompatible matrix based on chitosan and an acid, wherein said matrix comprises nucleic acids in chemically coupled-on form.

90. (New) The biocompatible matrix of claim 89, wherein the acid is a hydroxy carboxylic acid.

91. (New) A method for culturing cells in vitro, said method comprising:

obtaining cells; and

culturing the cells on a biocompatible matrix based on chitosan and an acid.

92. (New) The method of claim 91, wherein the acid is a hydroxy carboxylic acid.

93. (New) The method of claim 91, wherein the cells are obtained from cartilage, bone, blood vessel tissue, skin, or nerve tissue.

94. (New) The method of claim 91, wherein the matrix is a bioreactor filling material for producing cells, proteins, or viruses.

95. (New) The method of claim 91, wherein the matrix is a microcarrier of filling material for a bioreactor.

96. (New) The method of claim 93, wherein the blood vessel tissue provides for capillary generation.

97. (New) The method of claim 91, wherein the cells are blood stem cells.

98. (New) The method of claim 91, wherein the matrix provides for artificial organ generation.

99. (New) The method of claim 91, wherein the matrix provides for skin system generation.

100. (New) The method of claim 99, wherein the matrix is multilayered.

101. (New) The method of claim 91, wherein the matrix is produced by:

providing an aqueous solution comprising a chitosan and an acid, wherein said acid is present in excess;

freezing and drying the solution; and

removing excess acid before or/and after the freezing.

102. (New) The method of claim 101, wherein the acid is a hydroxy carboxylic acid.

103. (New) The method of claim 101, wherein the drying is achieved by sublimation under reduced pressure.

104. (New) The method of claim 91, wherein the matrix is sterilized.

105. (New) The method of claim 91, wherein the cells are cultured in a density of 10^6 or more cells per cm^2 on or in the matrix.

106. (New) A method for culturing cells in vitro, said method comprising:

obtaining cells; and

culturing the cells on the matrix system of claim 56.

107. (New) A method for repairing a cartilage or bone defect, said method comprising implanting the matrix system of claim 56 in the area of a bone or cartilage defect in a patient, wherein the matrix system is without previous cell colonization.

108. (New) A method for replacing a microcapillary in a patient, said method comprising introducing the matrix system of claim 56, in the form of a microcapillary, in a patient, wherein the matrix system is without previous cell colonization.

109. (New) A method for providing a filler material during surgery comprising implanting the matrix system of claim 56 in a patient in need of such filler, wherein the matrix system is without previous cell colonization.

110. (New) A method for culturing cells in vitro, said method comprising:

obtaining cells; and

culturing the cells on the matrix system of claim 84.

111. (New) A method for repairing a cartilage or bone defect, said method comprising implanting the non porous matrix of claim 84 in the area of a bone or cartilage defect in a patient, wherein the matrix system is without previous cell colonization.

112. (New) A method for replacing a microcapillary in a patient, said method comprising introducing the matrix system of claim 84, in the form of a microcapillary, in a patient, wherein the matrix system is without previous cell colonization.

113. (New) A method for providing a filler material during surgery comprising implanting the matrix system of claim 84 in a patient in need of such filler, wherein the matrix system is without previous cell colonization.

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 2. This sheet replaces the original sheet which was objected to for poor line quality and for including characters and reference numbers that were not plain or legible.

Attachment: Replacement Sheet